Watershed Observer

NEWSLETTER OF THE AMERICAN CHESTNUT LAND TRUST - VOLUME 26 NO. 4, FALL 2012

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COMING UP ON THE CALENDAR

December (2012)

2 ARBORETUM WORK DAY AT WARRIOR'S REST (1:00 P.M. – 4:00 P.M.)

8 GREENS SALE & BEACH HAYRIDE (11:00 A.M. – 2:00 P.M.)

9 PRINCE FREDERICK TO THE BAY OVERLOOK TRAIL WORK DAY (1:00 P.M. – 5:00 P.M.)

SEE MORE OF THE 2012-2013 CALENDAR ON PAGE 7 OR ON THE WEB.

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http://acltweb.org/nl

Land Manager's Corner

The American Chestnut: Hope for Revitalization

Figure 1: Chestnut Burr. Meadowview Chestnut Orchard, Meadowview, Virginia.

This newsletter article is the third and final installment of a three-part series about the American chestnut. Thus far, we have discussed characteristics and values associated with the American chestnut, the introduction of the chestnut blight (*Cryphonectria parasitica*) and its destructive progression throughout the geographic range of the chestnut, and the genetic back-crossing techniques that are now being employed by the American Chestnut Foundation. This season's article will cover several topics: how the chestnut blight fungus is disseminated and how it is able to kill its host species; the biological control of the chestnut blight fungus; and further hopes for the future.

To summarize previous newsletters, the American chestnut (*Castanea dentata*) was a dominant tree species in Eastern forests until the introduction of the chestnut blight fungus in the early 1900s. The chestnut blight was able to spread rapidly throughout the range of the chestnut at an estimated rate of 45 miles per year, killing approximately 3.5 to 4 billion trees (American Chestnut Foundation, 2001). The American chestnut, having no evolved defense against the Asian pathogen succumbed quickly, with nearly the entire population being wiped out between the years 1910–1950. Native chestnuts live today as sprouts from parent root stocks or sizable survivors distributed along natural range edges. The American Chestnut Foundation (TACF) has done much to restore this species through hybridization and genetic back-crossing. In essence, TACF has bred out the susceptibility of the American chestnut to the blight, and replaced it with the blight-resistant trait of the Asian chestnut.

Despite the devastation of the chestnut blight, hope of revitalization remains in the forms of hybridization and hypovirulence. The American Chestnut Cooperators Foundation (ACCF) is a non-profit organization that performs controlled breeding programs of 100% American chestnuts. This organization also conducts experimental research on a biological control agent that attacks fungus. Hypovirulence is a form of biological control, a tactic that involves the control of an unwanted pest using another living organism. History has many examples of biological control—in some cases solving the problem effectively, in other cases with devastating results. Perhaps the most common application would be buying a house cat to solve an overly rambunctious mouse population.

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Published quarterly by the American Chestnut Land Trust. The ACLT is dedicated to the preservation of Calvert County, Maryland's Natural and Historical Resources. Since it was established in 1986, ACLT has preserved over 3,000 acres. We own 922 acres, manage 1,780 acres owned by the State of Maryland, and hold conservation easements on 374 privately -owned acres.

Editors: Ellen and David Farr

From the President's Desk

Advocacy: A Critical Tool for Land Preservation

> "Never doubt that a small group of thoughtful committed citizens can change the world. Indeed, it's the only thing that ever has." Margaret Mead

I am sure most of you have heard by now that Pepco's infamous MAPP Project has been indefinitely canceled. We proudly rang that bell of victory loud and clear when we heard. We remain very grateful to many of you who gave support, to our nonprofit allies throughout the community who stepped forward with their voice and to the leadership of the County Commissioners who also showed real courage in this battle.

However, I am not writing today just to squeeze in another victory lap. Rather, I am writing instead to explore a worthwhile lesson I think this experience offers us as citizens and as a land trust. It is what I think Margaret Mead is suggesting above ... committed citizens working on shared goals, utilizing informed and coordinated actions, not only feels good, it is empowering and can produce concrete results.

Often, like most citizens, land trust members don't fully understand what advocacy is. They may not fully appreciate how it might be helpful to land trust objectives and very likely, are unsure about what they might personally contribute to an advocacy effort. My distinguished predecessor, Ted Graham, effectively addressed this very dynamic when he wrote in this column back in 2007. He generally posited that being an integral member of a land trust community requires more than the hard work associated with the literal stewardship of the land preserved. It also requires an activism in defending land trust goals, policies and priorities. It demands an activism that relies on a substantive understanding of the issue or policy in question, a thorough knowledge of the legal or technical procedure in which you are engaging and the commitment of time and resources to organize the support and wage the effort.

Threats to our cherished investments can emanate from many quarters. In a world where policy, politics and money intersect, no issue is ever resolved for good. You can win battles but never the war. Most policy decisions produce winners and losers. Those who lose will likely fight to have that issue revisited at the first opportunity if they have a lot at stake.

For example, our advocacy work may have helped win the battle over MAPP but we have yet to win the war. The pressure for additional energy capacity may have subsided for now, but it has not gone away forever. Environmental sensitivity as to how that renewed demand is accommodated may not be paramount the second time around. One day, we could also face a challenge to land we have already protected. Lower land values may certainly create land preservation opportunities now. However, as prices creep back up, so might the pressure to modify easement rules and regulations to put land once protected back in play. Yet another threat that is very real stems from fiscal constraints and partisan bickering at both the state and federal level. These seemingly irrational battles could significantly undermine pro land preservation policies. Programs and policies that encourage land preservation need to be protected and expanded, not defunded. This fight will only intensify as governments at all levels continue to tighten their fiscal belts in the months ahead.

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Around ACLT

Results of the ACLT Membership Survey:
What is important to our members and what might attract new members to join ACLT?

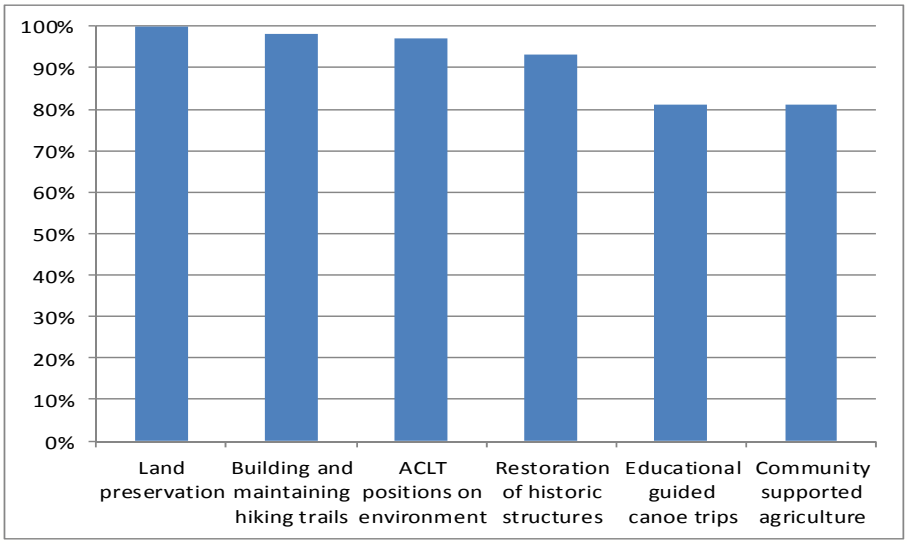
Market research is a valuable tool that is used by many companies to determine what products are desirable to consumers. Market research can also be useful to nonprofits to determine who their audience is, what the community's needs are, and how well the nonprofit is doing at delivering the services it provides. ACLT conducted a survey of our members earlier this year to gather information about ways that we can better serve our members and connect with our community.

We surveyed members who attended the annual membership meeting in March. Subsequently, we selected a random sample of our members, from within several categories, including relatively new members as well as charter and other longtime members, volunteers, and auction attendees to round out the surveys received from the annual meeting. ACLT's Membership and Outreach Committee designed the survey and board members and staff either telephoned or emailed the members to ask them to respond to a brief questionnaire. In all, we received 103 responses, representing roughly 16.5% of the membership.

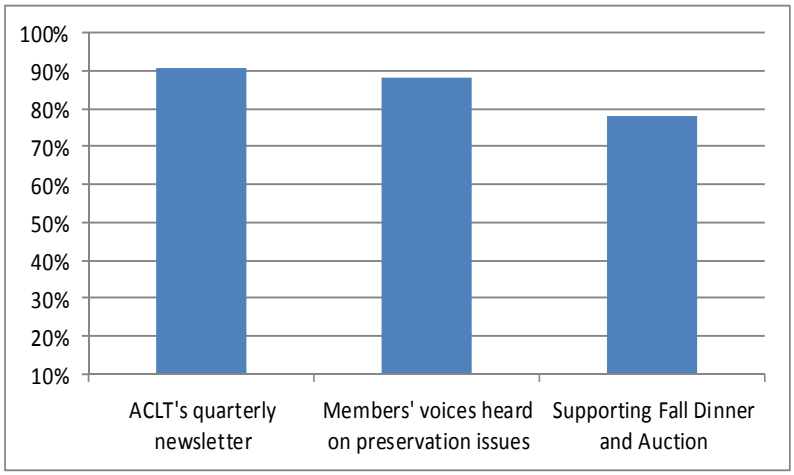
Demographically, we already knew that our membership is aging, but this was certainly confirmed by the survey results. Roughly 20% of the sample are charter members and, therefore, have been members of ACLT for 25+ years. Of our total sample, though, 62% are 60 years old or over.[1] Even more concerning is the fact that *none* of the respondents in our sample were under 30 years of age. Other results of the survey that are probably related to age were that 78% of the members responding to the survey live in a household with only 1 or 2 residents and that 71% did not have children residing in the household. Clearly, if ACLT is to continue to protect the Parkers Creek Preserve for the long term, it needs to be able to engage people under the age of 30 and young families with children. This will be the challenge for ACLT's Membership and Outreach Committee going forward.

The primary focus of the survey was to determine what activities and programs conducted by ACLT encouraged our members to become members in the first place and then to remain as members. Unequivocally, and not surprisingly, the number one ranked ACLT activity or program that our members considered important as their motivation for becoming and remaining members was land preservation, with 97% of respondents listing this as very important and the remaining 3% listing it as "somewhat important." The responses were consistent across age groups, with almost identical percentages from those 30–60 years old and those over 60. The other important ACLT activities and programs (analyzed by including respondents who listed the item as either "very important" or "somewhat important")[2] that our members identified were: 2) "building and maintaining hiking trails" (98%); 3) "ACLT positions on environmental policies or practices in the county" (97%); 4) "restoration of historic structures such as barns" (93%); and tied for 5) "educational guided canoe trips" and "community supported agriculture" (81%).

Most Important Reasons to be a Member of ACLT



Secondly, we wanted to know what membership benefits that ACLT provides to its members were considered important to them. ACLT's quarterly print newsletter, *the Watershed Observer,* received the highest overall rating of importance (including respondents who listed it as either "very important" or "somewhat important")[3] according to 91% of members. "Your voice is heard on land preservation/stewardship issues" ranked second highest, with 88% of respondents listing that as an important member benefit and "supporting ACLT's fall dinner and



auction," ranked third at 78%. Financial benefits such as discounts on ACLT merchandise and the benefit of being able to take a tax deduction for charitable donations ranked relatively low. All of the responses regarding benefits of membership had fewer answers in the "very important" category than the responses to the question about the importance of ACLT's programs suggesting that members find ACLT's activities and programs to be more important to them than what they received in return as a member benefit. This is useful information because it suggests that in marketing to new members we should focus on what we do more than on what the member gets by joining ACLT.

Thirdly, we asked our members what events and activities they had attended within the last five years (including the annual membership meeting, the dinner and auction, the volunteer appreciation dinner and the greens sale). Of the four events listed, not surprisingly our two signature events—the annual meeting in the early spring and the dinner and auction in the fall—were each attended by approximately 68% of respondents at some time within the last five years.[4] We also asked what outdoor activities they engaged in during the same time period (including self-guided hiking, guided hikes and guided canoe trips). Of the three activities, hiking on their own was the most popular, with 75% responding that they had hiked ACLT's trails within the last five years. It was not surprising that fewer existing ACLT members took advantage of the guided hikes and guided canoe trips, which are really designed to introduce new people to ACLT.

What did we learn about what is important to our members? Apparently, everything we do is either very important or at least somewhat important to the vast majority of our members! That is very affirming. Thank you! The harder nut to crack might be how do we attract new members like you? And, perhaps even more importantly, how do we attract younger versions of you?

According to Joanne Fritz, *Charitable Giving by the Generations,* http://nonprofit.about.com/od/fundraising/a generationalgivingstudy.htm, who reviewed the Convio study cited in footnote 1 below, traditional media is still the primary way all generations learn about a charity, but younger people are more likely to support a charity when friends or family ask versus the charity asking them. "The best way to reach them is either through inspirational stories in the media or better still, via their friends." As Fritz reports, "[t]he study also found that peer solicitation is strong across the generations, especially when donors have a pre-existing relationship with the charity." This suggests that it is important for our current members to engage the younger generations in their own families with ACLT. A great way to do this is to give a gift membership as a holiday or birthday gift and provide us with as much contact information as possible, including an email address. That way, the younger members of your family will begin to receive ACLT's print and e-newsletters and can check us out on Facebook.

As Fritz reports, "[m]ost donors, across generations, engage with a charity through a direct donation, but many attend events, visit the charity's website, or volunteer first. The younger the donor, the more ways of engaging turn up. In addition, Gen Y [born: 1981-1991] and X donors [born: 1965-1980] are more likely to show their support of a cause in ways other than a direct donation. They consider giving money just a small piece of supporting a cause, which includes spreading the word, fundraising for the cause, and volunteering." Perhaps our next survey should be of our Facebook fans (308 "likes" and growing)!

Karen H. Edgecombe,
Executive Director

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[1] Is this typical of other charities? According to a recent study by Convio, "when the estimated population of each generation is considered, Matures [donors age 67 and older] represent just 21% of total donors." *The Next Generation of American Giving*, http://www.convio.com/files/next-gen-whitepaper.pdf.

[2] The rankings are slightly different if one considers only the percentage of members listing the activity or program as "very important" as follows: 1) land preservation; 2) trails; 3) environmental positions; 4) historic structures and canoe trips (tied); and 5) the CSA.

[3] Again, the rankings are slightly different when one considers only the percentage of members listing the benefit as very important: 1) your voice is heard; 2) quarterly newsletter; and 3) e-newsletter.

[4] The data for attendance at the annual membership meeting may be skewed since one member of each household in attendance at the annual meeting in 2012 was asked to complete a survey on the day of the meeting, representing approximately 50% of the total sample for the survey.

Recent Happenings

BIG Things are Happening at Double Oak!

Led by volunteer farm manager Jeff Klapper, ACLT is erecting a new barn at Double Oak Farm. Solid oak timbers will frame the new barn at the American Chestnut Land Trust and it will be sided with locally-sourced tulip poplar boards salvaged from Hurricane Irene. Bruce Cowie of Susquehanna Timber Frames, LLC of Lancaster, Pennsylvania designed the structure and is providing the timber-framing expertise based on colonial-era techniques. ACLT volunteers are assisting, several of whom have taken days off from work to be a part of this once-in-a-lifetime opportunity.

In addition to storing equipment for the Double Oak Farm CSA, the new barn will also serve as ACLT's new north side trailhead information center. Partial funding was provided by the Maryland Heritage Areas Authority in conjunction with the Prince Frederick to the Bay Overlook Trail. Matching funds were provided by ACLT and by ACLT's "Founding Farmers" who provided "seed" money for the start of ACLT's CSA. A volunteer barn work day is planned for November 10th to enclose the barn with siding and add the porches. Please email Kady at volunteer@acltweb.org if you're interested in volunteering for (or observing) the event. Visit us on facebook to see more pictures of the barn under construction!

Karen Edgecombe

Our hardworking barn construction crew: (left to right, top row) Steven Gaines, Chris Cowie, Tom Miller. (left to right, bottom row) Ed Kobrinski, Steve Cloak, Jeff Klapper, Bruce Cowie, Ben Youngkin. Photo by Kady Everson.

The construction crew installing rafters with the aid of a crane. Photo by Jeff Crespi.

Volunteer Appreciation Dinner

ACLT's annual ***Volunteer Appreciation Dinner*** was held on Friday evening, September 21st here at the Double Oak Farm. Over 65 volunteers joined us for an evening of good food, great company, and picture perfect fall weather. As the sun set, the ACLT tent was lit up with lanterns and tiki torches while our farmer Jeff provided his very own CSA pumpkins for decoration. Per ACLT tradition, staff members (past and present) provided homemade desserts including a pumpkin trifle, an Asian pear tart, a chocolate lava cake, and of course, Liz Stoffel's famous cookie bars. Many thanks to all of our hardworking volunteers who make ACLT shine!

Kady Everson

A pine bough addition to the barn! According to Steve Cloak, one of ACLT's construction crew members, pine boughs are a symbol of thanksgiving and respect to the forests that the wood was harvested from. Many also see it as a good luck charm. Photo by Steve Cloak.

Volunteer Spotlight: Marty Kilpatrick

This issue's volunteer spotlight shines on Marty Kilpatrick, an ACLT member and hunter in the Parkers Creek Conservation Society (PCCS). Marty has been part of the ACLT / PCCS family since 2010 and has left a significant mark in only two short years. In that time period, Marty has spent countless hours clearing debris, repairing bridges, and keeping invasive plants from encroaching onto our trails.

Most recently, Marty has assisted our CSA Farmer, Jeff Klapper, in the construction of ACLT's new barn. Marty, along with a mostly volunteer team of construction pros, took on the project with gusto. In just a few short days, the barn went from being a concrete foundation with pieces of wood lying around it to a fully framed structure awaiting siding and a roof (see barn photo spread on page 5). Marty's construction skills have also been put to use in the assembly of the CSA's greenhouse—no easy task considering the building parts came with faulty directions!

Our farmer Jeff, who also happens to be a member of ACLT's Hall of Fame Volunteers, can't assign a value for all of the hard work and subsequent progress Marty has made on the barn and greenhouse. "There is no upper limit to the worth of someone like Marty, who can work with tools, understands construction, thinks problems through to solutions, and is always looking for the next opportunity to help. He has been a real asset in the progress at Double Oak Farm," says Jeff.

On a recent Friday afternoon, I had a chance to sit down with Marty and get to know a little more about him, his family, and a fun fact that we have in common.

Marty and his wife, Jennifer, have lived in Calvert County for over 20 years and have two daughters, Becca (12), Lindsey (15), and one festively plump dog named Sparky. Jennifer's job as a second grade teacher initially brought the couple to the area, and in the intervening time the family has established strong ties within the county.

Marty has been employed by Giant Foods as a meat cutter for the past 25 years. (In fact, Marty met his wife Jennifer in another Giant store where she worked before starting her teaching career.) Having recognized his outstanding work ethic, the company promoted him to manager of the meat department over 12 years ago. Marty works at the Lusby Giant six days a week, so stop by and say hi if you see him.

With only one day off a week, Marty doesn't have a lot of free time for hobbies, though he enjoys hunting when time allows. Most of Marty's free time is spent with his family, volunteering with their local church, and of course, volunteering for the ACLT.

Marty putting his skills to work on the new CSA barn. Photo by Jeff Crespi.

Marty was first introduced to the ACLT and PCCS six years ago by Robert Noble, a fellow member of the PCCS hunt club. After patiently waiting for four years, Marty was moved from the waitlist to becoming an active member of the PCCS and ACLT. (As a brief background, ACLT has an agreement with the PCCS hunters that requires them to volunteer a certain number of hours in exchange for hunting privileges on ACLT managed land.) Between Marty's work on our trails, greenhouse, and barn, he easily surpassed his required hours, yet still comes back for more—pretty incredible given his hectic schedule.

"There is a lot of personal satisfaction that can be derived from working with your hands and being part of something that makes a difference in the surrounding community and environment," says Marty. Having lived in Calvert County for over two decades, Marty has a special interest in helping to preserve the natural and cultural resources of Parkers Creek. "The health of Parkers Creek and the health of the Bay are directly linked. It is refreshing to work with a group of people who are likeminded, knowing that preserving this land is good for us, and good for future generations."

And for that fun fact that Marty and I have in common: we both grew up in the same small town of Olney, MD, but attended different high schools—one having a much better football team than the other.

All joking aside, ACLT is incredibly grateful to have someone as dedicated and hardworking as Marty on our team. Marty, thank you for all that you do!

Kady Everson
Community Relations Coordinator

American Chestnut Land Trust Calendar of Events — 2013

December (2012)
- 2 Arboretum Work Day at Warrior's Rest (1:00 p.m. – 4:00 p.m.)
- 8 **Greens Sale & Beach Hayride** (11:00 a.m. – 2:00 p.m.)
- 9 Prince Frederick to the Bay Overlook Trail Work Day (1:00 p.m. – 5:00 p.m.)

January
- 13 Prince Frederick to Bay Overlook Trail Work Day (1:00 p.m. – 5:00 p.m.)
- 26 Vine Vindicator Work Day (9:00 a.m. - 12:00 p.m.)

February
- 23 Winter Hike at Double Oak Farm (1:30 - 3:30 p.m.)
- 23 Vine Vindicator Work Day (9:00 a.m. - 12:00 p.m.)

March
- 9 **Annual Membership Meeting** (9:30 a.m. - 12:00 p.m.)
- 23 Hiking Trail Maintenance Day (9:00 a.m. - 12:00 p.m.)
- 24 Water Quality Monitoring Training (9:00 a.m. – 1:00 p.m.)
- 24 Barn Work Day (8:00 a.m. - 12:00 p.m.)

April
- 13 Canoe Guide Training (tbd)
- 27 **Earth Day** (8:30 a.m. - 12:00 p.m.)
- 28 Spring Guided Hike on Warrior's Rest (9:00 a.m. - 11:00 a.m.)

May
- 4 Barn Work Day (8:00 a.m. - 12:00 p.m.)
- 18 Guided Canoe Trip (tbd) *(Sunday Rain Date)*
- 25 Vine Vindicator Work Day (9:00 a.m. - 12:00 p.m.)

June
- 1 Guided Canoe Trip (tbd) *(Sunday Rain Date)*
- 8 Parkers Creek to Flag Ponds Paddle (7:30 a.m. - 12:00 p.m.)
- 22 Guided Canoe Trip (tbd) *(Sunday Rain Date)*

July
- 20 Guided Canoe Trip (tbd) *(Sunday Rain Date)*

August
- 2 Walk Along the Bay Membership Event (tentative date)
- 10 Guided Canoe Trip (tbd) *(Sunday Rain Date)*

September
- 7 Holly Arboretum Work Day at Warrior's Rest (9:00 a.m. – 12:00 p.m.)
- 7 Guided Canoe Trip (tbd) (*Sunday Rain Date)*
- 21 Guided Canoe Trip (tbd) *(Sunday Rain Date)*
- 28 Vine Vindicator Work Day/Training (9:00 a.m. - 2:00p.m.)

October
- 5-6 Patuxent River Appreciation Days (10: 00 a.m. – 5:00 p.m.)
- 12 Guided Canoe Trip (tbd) *(Sunday Rain Date)*
- 26 Guided Canoe Trip (tbd) *(Sunday Rain Date)*
- 26 Vine Vindicator Work Day (9:00 a.m. – 12:00 p.m.)
- 27 Fall Foliage Hike at Double Oak (1:00 p.m. – 3:00 p.m.)

November
- 2 **Silent Auction & Dinner**

December
- 1 Arboretum Work Day at Warrior's Rest (1:00 p.m. – 4:00 p.m.)
- 6 Greens Sale Prep & Wreath-making Workshop (10:00 a.m. – 3:00 p.m.)
- 7 **Greens Sale & Beach Hayride** (11:00 a.m. – 2:00 p.m.)

GREENS SALE & HAYRIDE

Saturday, December 8, 2012
11a.m. - 2p.m.

Purchase swags, wreaths, and garlands for holiday decorating to benefit Warrior's Rest Sanctuary.

ACLT logo merchandise also available for purchase to benefit the ACLT. Great gifts for friends, family, and co-workers!

Greens Sale & Hayride located at
WARRIOR'S REST SANCTUARY
1920 Scientists Cliffs Road,
Port Republic, MD 20676

Mark Your 2013 Calendar

Member Notice

The 2013 Annual Membership meeting of the American Chestnut Land Trust will be held on Saturday, March 9, 2013 from 9:30 a.m.—12:00 p.m. Noon at St. John Vianney Catholic Church in Prince Frederick, Maryland.

(CONTINUED FROM PAGE 1)

So, how can a biological control agent be applied to a fungus? Hypovirulence in fungal plant disease processes refers to the reduced ability of a specific pathogen to infect, colonize, kill, and/or reproduce on susceptible hosts. In regards to the chestnut blight and its host (American chestnut), the relationship involves a third organism, a family of viruses that infect fungus (Boland, 2004). In the case of the American chestnut, it is the fungus that is killing the tree that is infected with a virus. In other words, the fungus gets the flu and is too weak to efficiently kill the tree, so the tree is able to adequately defend itself. This is not to say that the tree is not infected with a mortal disease, just that the fungus itself is less virulent (not as deadly), and takes longer to actually kill the tree. This offers the victimized tree the chance to reach sexual maturity and contribute to the gene pool.

It is these strains of fungus that are infected with a virus that encompass the potential biological control of the chestnut blight. A fungus that is infected with this virus is referred to as a hypovirulent strain (hypo meaning less, and virulent meaning deadly). The main goal of the biocontrol effort lies in the infection of virulent strains of the chestnut blight with a hypovirulent fungal strain (strain infected with virus) and encouraging the hypovirulent strain to circulate throughout the tree and to other infected trees (Angnostakis, 1979).

Well, how does one intentionally infect a fungus with a virus? This is the trick that many great minds are working on at several universities. To begin to answer the question, we have to look at how the fungus works within the tree and what the tree's response is. In order to initiate infection, a fungal spore must gain entry into the host. This zone of infection is usually a bark fissure or wound along the trunk stems or branches. Once a spore gains entry into the tree through a wound, the fungus causes the formation of sunken cankers by colonizing and killing host tissue. Colonization of host material by a fungus is similar to how a regular plant would colonize the ground it plans to grow on—it develops and sends out a root system to absorb nutrients. Mycelium is the vegetative part of a fungus, that is made up of hyphae, which function similar to plant roots. Once established within a host, the invading fungus will send out hyphae which will penetrate and start breaking down host tissue, all the while absorbing nutrients and perpetuating its own growth.

Trees have a well-designed mechanism to contain infections, often referred to as compartmentalization. The normal response of a tree to an invading pathogen is to shut down the infected area, compartmentalizing or containing the infection to one specific region and killing off surrounding cells and tissues to keep the pathogen contained. These defenses, or cell walls, shut off the spread of the infection as it attempts to invade upward and downward along the stem, interiorly towards the tree's center, laterally, and lastly forming callus tissue over the infection site. To counter this defense the fungus spreads at a faster rate than the host can form callus tissue, outspreading the protective barrier (Tainter, 1996). The callus tissue formed by the host tree causes the outer bark to swell in a characteristic canker. The canker will eventually encircle the trunk or branch and effectively cut off nutrient flow to the upper regions of the tree—thus killing the aboveground portion of the host tree.

What does all this have to do with a virus? Forest pathologists who work with chestnut blight have many things to consider in this three-way relationship. First off, there have been a series of mutations to the chestnut blight since its introduction in the early 1900s. Scientists estimate there may be as many as 250 different strains of the chestnut blight (TACF, 2001). Secondly, there are many strains of the virus. Unfortunately for the American chestnut, the blight is particularly picky about what it allows itself to be infected with. The basic idea of the hypovirulence approach is to introduce a hypovirulent strain of the fungus to a virulent strain that is attacking an American chestnut tree, through an inoculation process. The hope here is that the introduced fungi will be vegetatively compatible, that is, the two different fungus types will fuse together and share genetic material.

The inoculation of chestnut blight canker with a hypovirulent is most often performed by a direct inoculation technique. Inoculation is accomplished by punching or drilling holes around the circumference of the individual canker margins of individual trees. Hypovilrulent strains of the fungus are then applied directly to the holes. This sets the scene in which two different strains of the chestnut blight are colonizing the same host with their plant-like hyphae. Upon meeting, the hyphae tips of the two different blights will press against one another in a recognition effort. If there are genetically compatible properties, the two fungal types will fuse and share genetic material. As a consequence, the virulent, or deadly strain of the fungus, will "get the flu" and be less efficient at killing its host. If the "flu" transfer is successful, the next hope is that it will be circulated throughout the tree. However, if the branches of fungi fail to be compatible, then a barrier is formed between the two strains, with the virulent strain continuing to kill the host tree.

As stated earlier, the blight is very particular about who it shares its genetics with. The compatibility recognition is, in a sense, like a secret cytoplasmic handshake that science still cannot explain. Lack of spore production of hypovirulent fungal strains pose a significant

setback for biological control of chestnut blight. Chestnut blight is able to reproduce by means of both sexual and asexual spores—with sexual spores being dispersed by wind and asexual spores often relying on rainsplash, and insect/animal vectors to transport spores to infection sites. Hypovirulent strains of chestnut blight, however, only transfer friendly traits through asexual reproduction—eliminating a major form of transportation. Yet another setback to this biocontrol tactic is that inoculating infection sites with hypovirulent strains is labor intensive. Trees infected with blight will often have several cankers on stems and limbs. These cankers need to be manually drilled and inoculated with the hypovirulent strain of the fungus, which is time consuming and expensive.

As the blight roared through eastern forests in the first half of the 1900's, large-scale salvage operations were initiated on thousands of acres of forestland in an attempt to harvest American chestnuts before the blight rendered the wood useless. It is likely that most chances for genetic resistance were lost during these operations. In Calvert County, Maryland there are sizable survivors that may be capable of carrying on the legacy of the American chestnut. However, with the lack of abundant, sexually mature populations of parent trees to contribute to genetic diversity thoughts of re-establishment may seem far off. Many seedlings that are the offspring of partially resistant parent trees often perish shortly after being infected with the blight. With this in mind, the idea of prolonging the lives of partially resistant trees until sexual maturity through hypovirulence would be a marvelous achievement. Indeed, influx of genetic diversity to forest systems could spark the increased resistance needed to restore the American chestnut to the valuable ecosystem component that it once was.

As of 2012, TACF has planted 8,000-12,000 blight resistant hybrid seedlings on National forestland in several states within the natural range of the American chestnut. These super seedlings are 15/16 American chestnut and 1/16 Asian chestnut crosses that demonstrate a high degree of resistance to the chestnut blight fungus. Furthermore, the ACCF has planted an estimated 190,000 seedlings and seed nuts from 100% American chestnut resistant parent trees on forestland within the range of our native chestnut. In 2008, TACF and the Appalachian Regional Reforestation Initiative (ARRI) partnered up for restoration projects of previously mined lands, involving wide-spread plantings of American chestnut seedlings along with many other species of hardwoods (Metheney, 2011). Thus far, both organizations have been pleased with the growth and survival rates of the super seedlings.

So now you know the story of the American chestnut's demise and what science is doing to restore the species. If you would like to learn more about any of the topics that have been covered, then check out the websites for The American Chestnut Foundation and the American Chestnut Cooperators Foundation. Science is most certainly at the doorstep of possibilities when it comes to genetics research endeavors. It is a comfort to know that we acknowledge the absence of our native giant, and are making strides toward its recovery and re-establishment into our eastern forests.

Steven Gaines
Land Manager

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Early Research on Chestnut Diseases by G. Flippo Gravatt

There is a direct and personal connection between the ACLT and efforts to fight chestnut blight. In 1987, the ACLT made its first land acquisition, purchasing 436 acres from Annie Rathbun Gravatt (1894-1986), the widow of George Flippo Gravatt (1891-1969). Both of the Gravatts were trained plant pathologists who worked at the Department of Agriculture's research facility in Beltsville, Maryland. Flippo Gravatt worked for the USDA from just before World War I until the 1950s. A significant portion of his work concerned chestnut diseases, both *Cryphonectria parasitica* (the "blight") and a second disease-causing fungus that attacks the chestnut's roots, *Phytophthora cinnamomi*.

In 1937, the Gravatts founded and developed the Scientists' Cliffs community (the ACLT's neighbor to the east). Their cabin in the community was built of chestnut logs and they decorated their stationery with a drawing of a chestnut leaf and fruit, identified as *Castanea dentata (Marsh.) Borkh.*, a version of the botanical name that includes the abbreviated identification of the first naturalists to describe the species, Humphry Marshall in 1785 and Moritz Balthasar Borkhausen in 1800.

Like Steven Gaines, the author of the preceding three-part article, Gravatt had been a student at Virginia Polytechnic Institute in Blacksburg. Gravatt's contributions to the study of chestnut diseases are featured in a 2007 book that might be called a "cultural history" of the chestnut in the United States: Susan Freinkel's *American Chestnut: The Life, Death, and Rebirth of a Perfect Tree* (Berkeley: University of California Press).

Freinkel reports that the state of Virginia established a Chestnut Blight Laboratory at Virginia Polytechnic Institute in 1912 and that Gravatt became the unit's head, just before his move to the USDA. Gravatt's report *The Chestnut Blight in Virginia* (Commonwealth of Virginia) was published two years later. Meanwhile, Gravatt's study of *Phytophthora cinnamomi* resulted in a 1945 publication in the journal *Phytopathology* in 1945. In the late 1940s, Gravatt participated in USDA efforts to hybridize American and Chinese chestnuts, an effort ultimately judged to be unsuccessful. In 1951, toward the end of his USDA career, he held the title Senior Pathologist, Bureau of Plant Industry, Division of Forest Pathology. By the 1960s, the USDA had stopped its work on chestnut diseases.

Submitted by Carl Fleischhauer

Bridge and Trail Construction Volunteers Needed

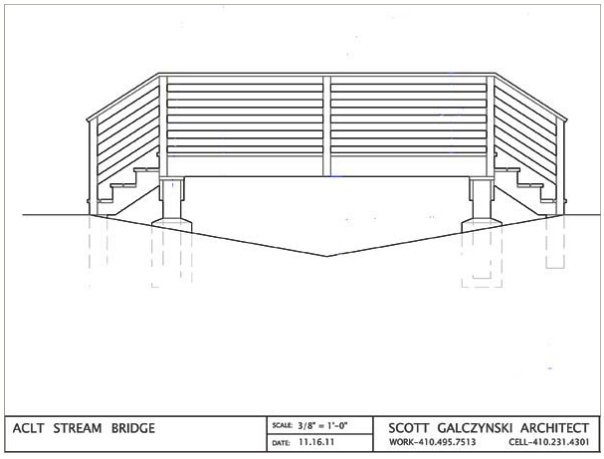
Over the next six months ACLT plans to construct the **new Prince Frederick to the Bay Overlook Trail** connecting Prince Frederick to ACLT's existing trails on the north side of Parkers Creek. This will require the construction of five pedestrian bridges as well as the trail itself. The trail route has been flagged and mapped, and bridge plans and materials lists have been drawn up; however, we have been stymied in our efforts to get started on this long-awaited project by delays associated with issuance of the Maryland Department of Environment (MDE) wetlands and waterways permit. This permit is needed to construct trail sections in wetland areas and bridges for each stream crossing. However, hope springs eternal that this permit will be forthcoming soon!

We have established two work days to begin work on the new trail: Sunday, **December 9, 2012**, and Sunday, **January 13, 2013**. If you are interested in helping out with either trail construction or bridge building on one or both of these work days, please contact ACLT volunteer coordinator Kady Everson at (410)414-3400 or volunteer@acltweb.org.

If you are looking for a **service project to earn your Eagle Scout rank,** we hope you will consider coordinating the construction of one of the five pedestrian bridges needed for the new trail. Please contact ACLT land manager Steven Gaines at (410)414-3400 or landmanager@acltweb.org.

Your contribution to this exciting project will be much appreciated!

Karen H. Edgecombe



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Recognizing that organized citizen advocacy is a viable response to these and other potential threats is a critical first step. Remaining informed about the issues of the day that affect what is important to us is equally important. However, informed concern without concrete actions to address those concerns won't get the job done. Advocacy actions are rarely complicated activities. It may consist of writing a letter of concern to your local representative or a short letter to the editor of your local newspaper. Sometimes it requires attending a local rally or a visit to an official's office in Annapolis or a member of Congress in Washington, D.C. And of course, there is always the option to financially contribute to the effort's war chest. All these efforts, are maximized when they are coordinated with the collective effort in pursuit of explicitly shared goals.

The opportunity to continue to do good through our work at ACLT is limitless. Unfortunately, so are the threats. Advocacy is a critical tool we have used effectively in the past and I am sure we will need again. We need the will, the skill and the resources to undertake these efforts at a moment's notice. My hope is that you will share the view that advocacy will remain a critical part of ACLT's mission and more importantly that you will be willing to pitch in when the next challenge is upon us.

Pat Griffin, President
(Pgriffin@griffinhome.com)

Thank you for your support ...

New Members

ACLT would like to welcome the following new members since the Summer 2012 newsletter:
Ms. Rebecca Bartlett
Mr. Davis Craven
Mr. Michael Dalgetty
Mr. Carl Holmberg
Mr. & Mrs. Jeffrey K. Lauer
Mr. Donald Lederer
Mr. & Mrs. Russ Mogel
Mr. James Stedman

In Honor of Contributions

In Honor of **Mr. Kenneth Romney** who is a dedicated volunteer and all around good neighbor:
Ms. Leslie Starr and Mr. Joseph Turner

In Memory of Contributions

Thank you to the following persons who made a memorial contribution since our last newsletter:
In memory of **Ms. Vera Graham,** a longtime member and supporter:
Dr. & Mrs. Edward U. Graham

In memory of **Chris Klapper**, beloved son of Jeff Klapper:
Dr. & Mrs. Edward U. Graham

In memory of **Mr. William Johnston** who was a Sustaining Member and longtime supporter:
Mr. & Mrs. Glynn Frank

In memory of **Edward "Eddie" May:**
Mr. and Mrs. Christopher Kelly

In memory of **Mrs. Virginia O'Neill** who was a Charter Member and longtime supporter:
Mr. & Mrs. James Boxall III
Dr. & Mrs. Edward U. Graham

Spring Appeal

The Staff and Board of Directors wish to thank the following for their contributions to the 2012 Spring Appeal since the Summer 2012 newsletter:
Bayside Toyota of Prince Frederick
Mr. Frederick H. Bumgarner
Mr. and Mrs. John C. Campbell
Ms. Penny Firth and Mr. David Knapp
Mr. Dennis Loew
Mr. & Mrs. George Surgent

General Contributions and Designated Gifts

Thank you to the following for your generous gifts and support:
Ms. Olivia Alison
Mr. & Mrs. Gary Loew

Matching Gifts:

Thank you to the following members who have made matching contributions:
Greg and Linda Locraft / Macy's Foundation

All auction angels, supporters and volunteers will be listed in the winter newsletter.

EarthShare Mid-Atlantic

Please remember that ACLT is now a member of the workplace-giving federation EarthShare Mid-Atlantic. ACLT is enrolled in the Combined Federal Campaigns for the National Capital, Chesapeake Bay, Western Maryland, St. Mary's, Potomac, and Shenandoah Valley Areas. **ACLT's Combined Federal Campaign number is #53731**. ACLT also participates in the **Maryland Charity Campaign** and our MCC number is **#1549**.

American Chestnut Land Trust, Inc.
Post Office Box 2363
Prince Frederick, MD 20678

Come Join Us!

Detach and Mail to: The American Chestnut Land Trust, Inc., P.O. Box 2363, Prince Frederick, MD 20678

Name _____ **e-mail** _____

Address _____

_____

Phone _____ **I (we) learned about ACLT from** _____

Regular Membership

___ Land Saver—$35.00

___ Land Protector—$60.00

___ Land Conservator—$150.00

___ Habitat Protector—$500.00

___ Trustee of Land—$1000.00

___ Sustaining—$2500.00

Corporate Membership

___ Land Saver Corporate—$150.00

___Land Protector Corporate—$250.00

___ Land Conservator Corporate—$500.00

The American Chestnut Land Trust is a 501 (c) (3) charitable organization. A copy of the current ACLT financial statement is available on request. Requests should be directed to the American Chestnut Land Trust, Inc, P.O. Box 2363, Prince Frederick, MD 20678 or call (410) 414-3400. For the cost of copies and postage, documents and information submitted under the Business Regulation Article of the Annotated Code of Maryland are available from the Secretary of State.